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| 10/056,906 | 01/24/2002 | Wayne G. Renken | M-12467 | 2359 |

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EXAMINER

GARBER, CHARLES D

ART UNIT PAPER NUMBER

2856

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/056,906

Applicant(s)

RENKEN, WAYNE G.

Examiner

Charles Garber

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-45 is/are pending in the application.
- 4a) Of the above claim(s) 21-43 and 45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 14-20 is/are rejected.
- 7) ☒ Claim(s) 7-13 and 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/8/2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

Claims 21-43 and 45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 10.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4, 6, 15-18, 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Smesny et al. (US Patent 5,444,637).

Regarding claim 1, Smesny discloses a semiconductor wafer for sensing, recording and retrieving fabrication process conditions to which the wafer is exposed which is equivalent to a system for sensing and recording or transmitting processing conditions as in the instant invention. Smesny includes a wafer 10 which is a substrate having a surface. The wafer or substrate includes sensors 12 to measure the processing conditions of the substrate at different areas of the substrate as shown in figure 1 (also read column 4 lines 11-14). Circuit 18 is an electronics platforms mounted to the surface of the substrate comprising signal acquisition circuitry coupled to an output of the sensors as shown in figure 2 (read also column 4 lines 51-54).

As for claim 4, as discussed above the Smesny reference substrate is a wafer.

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As for claim 6, Smesny further discloses outputting stored digital data to an external processor (column 4 lines 21-25) which is considered equivalent to a remote data processing module.

As for claim 15, the reference device may sense one or more conditions including pressure, temperature, fluidic flow rate, gas composition (abstract), vibration (column 2 lines 22-23), light waves, and charge (column 7 lines 66-67) which is equivalent to sensing one or more of temperature, pressure, flow rate and vibration as in the instant invention. Though Smesny does not recite measuring ion current density, ion current energy, and light energy density these were only offered in alternative form not inclusively.

As for claim 16, figure 1 shows the sensors 12 are discrete sensors mounted in or on the wafer.

As for claim 17, the sensors (as well as the signal acquisition/condition circuit to which it connects) are lithographically formed on the surface of the wafer (column 4 lines 46-54), which is substantively equivalent to the sensor being part of an integrated circuit formed in or on the wafer.

As for claim 18, power supply 16 shown in figures 1 and 2 is an electronics platform comprising a power supply.

As for claim 20, Smesny discloses the input pad and similarly configured output pad may communicate data optically, acoustically or inductively (column 5 lines 15-18 and column 7 lines 52-61). An antenna of some sort connected to the wafer would be an inherent component of an output pad communicating inductively.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smesny et al. (US Patent 5,444,637) in view of Akram et al. (US Patent 6,472,240)

Regarding claim 2, Smesny as discussed above does not teach each of the one or more platforms comprising one or more legs and a shelf, the one or more legs elevating the shelf from the surface. Smesny in fact does not expressly recite how the various electrical modules or platforms (such as signal acquisition and conditioning circuit 18) are connected to the sensors.

Akram et al. (US Patent 6,472,240) teaches an interface connection 18b which may be considered part of a signal acquisition circuit as well as a shelf-like platform for the circuit internal electrical connections 17. (see figure 1B and column 5 lines 11-28)

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The connection 18b stands upon a plurality of interconnects 7 which act as legs elevating the connection from the surface of the substrate 11.

It would have been obvious to one having ordinary skill in the art to connection a circuit platform to a sensor connection with leg-like connections 7 as one possible alternative for effecting a connection between and sensor and the signal processor.

As for claim 3, Akram shows the circuitry 17 in contact with the shelf-like connection 18b. Though the instant invention recites the circuit "upon" the shelf "upon" is considered equivalent to "on" which is (1) used to indicate position above and supported by or in contact with; (2) used to indicate contact with or extent over (a surface) regardless of position; (3) used to indicate location at or along; (4) used to indicate proximity; Used to indicate attachment to or suspension from; (5) used to indicate figurative or abstract position. In this instance the circuit is upon the shelf-like connection in the same sense as the second part of the first definition of "on".

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the circuit to be on or in contact with the shelf-like connection for essentially the same reasons discussed with respect to claim 2 above.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smesny et al. (US Patent 5,444,637) in view of Ogata (US Patent 6,313,903)

Smesny as discussed above teaches the substrate is a semiconductor wafer and not expressly comprising glass.

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Ogata in an invention using a substrate for monitoring wafer processing explains that "It should be noted that substrates may be glass substrates for LCD as well as wafers." (column 10 lines 27-28)

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a wafer or glass substrate as the fabrication processes and careful control requirements are similar.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smesny et al. (US Patent 5,444,637).

As discussed above with respect to claim 6 the Smesny external processor receives output from the wafer 10 and therefore must inherently include an input device of some sort. However, the reference does not expressly recite the processor includes a microprocessor, a storage device, a display. Nevertheless, Examiner considers a microprocessor, a storage device, and a display are widely known to be advantageous components of processors at the time the invention was made. One having ordinary skill in the art at the time of the invention would have known that a Personal Computer (PC) for instance would have been an advantageous and conventional type of processor to interface with a programmable device such as the wafer 10 due to its availability, low cost and flexibility and PC's inherently include a microprocessor, storage device and display.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smesny et al. (US Patent 5,444,637) in view of Lauf et al. (US Patent 5,969,639)

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Smesny as discussed above with respect to claim 17 does not expressly teach the power supply comprising an inductive power source.

Lauf teaches a similar process condition measuring device "must have its own power supply to drive its circuits and transmitter; this power supply can be a thin-film battery, a capacitor, a photovoltaic device, or an inductive device for receiving transmitted power from an external source" (column 4 lines 5-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide advantageously alternative power sources including as a possibility an inductive device.

Allowable Subject Matter

Claims 7-13 and 44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 7, the references discussed above teach all the limitations except for the electronics platform further comprising data transmission circuitry comprising a transceiver, the data transmission circuitry operable to transmit the processing conditions in real time during measurement of the processing conditions to the data processing module via the transceiver.

Smesny and Akram may teach a circuit platform elevated with legs above a substrate surface, however, they do not go so far as to suggest the elevated platform including the specific circuits as in the instant invention.

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Claims 8-13 depending from allowable claim 7 are allowable for the same reason.

As for claim 44, Smesny does not expressly teach the electronics platform is mounted to a recessed portion of the surface of the substrate, wherein the recessed portion and the platform are within a cavity and wherein the platform is substantially equal in mass to the removed cavity.

Fisher (US Patent 6,378,378) and Akram et al. (US Patent 6,472,240) teach mounting sensors within a cavity or recess however they do not teach an electronic platform apart from a sensor in a recess nor sizing the platform to equal the mass of the removed cavity material.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Renken et al. (US Patent 6,190,040) is incorporated in the invention by reference.

Renken et al. (US Patent 6,325,536) is an integrated wafer temperature sensor but with no electronics platform on the wafer surface.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles Garber whose telephone number is (703) 308-6062. The examiner can normally be reached on 6:30 a.m. to 3:00 p.m..

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (703) 305-4705. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7725 for regular communications and (703) 308-7725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

cdg
June 4, 2003

A handwritten signature in black ink, appearing to be 'cdg', written in a cursive style.